

nearest existing reptiles would point to its oviparity as the more probable kind of generation ; but the genus *Zootoca* and the Viper show that analogy is no safe guide in such a question ;” “ and the European black and yellow Salamander of Bohemia once brought forth young ones half as long as the mother, either in the Doctor’s pocket or College rooms ;” therefore with such evidence it now appears fair to conclude that the *Ichthyosauri* were viviparous.

Montague House, Lambridge, Bath, Dec. 9th, 1845.

IX.—*Journey through Java, descriptive of its Topography and Natural History.* By Dr. FR. JUNGHUHN*.

[Continued from vol. xvi. p. 466.]

Journey to the Extinct Volcano of Tjermai.

THE author saw here large woods of *Tectonia*. The *Tectonia grandis* is one of the few tropical trees which occur in company, and expel all others. But it does not afford the cool shade, nor form such a beautiful vaulted foliage as other tropical trees ; no *Liane* climbs up its boughs ; its stems, destitute of bark, rise naked and barren, with only here and there a single leaf. The ground beneath it is covered only with dry grass ; no *Pothos*, no *Orchideæ* or *Scitamineæ* here raise their succulent stalks. Yet here also man appears to have contributed much to the barrenness of these woods ; for the Japanese, in order to drive away the tigers and to make the soil cultivable, yearly set fire to large districts of the grass Alang-alang (at the driest season), by which also the leaves of the *Tectonia* are at the same time singed. When the author had reached the coffee-plantations, he entered at the same time upon the lower limits of the forest tract, which is everywhere divided by sharp lines from the lower cultivated country. With the increase of cultivation the extent of the forests is more and more narrowed. The author saw thousands of trees felled in the coffee-plantations ; a few being left standing wide apart, to shade the young coffee-plants. “ We thus explain,” he observes, “ the sharply-defined limits by which the woods, almost on all the higher mountains in Java, are separated from the lower cultivated declivities,—a limit which is continually forced higher and higher by the advance of cultivation, which however on most of the mountains begins at a height of from 3000 to 4000 feet. At a distance, therefore, the upper half of such mountains appears of a dark bluish green, while the lower half has a bright greenish yellow aspect.

“ We are inclined to think that the forests in Java originally extended to the foot of the mountains, and indeed to the sea-coast, and that they have been extirpated up to their present elevation solely by cultivation. We frequently observe forests cease suddenly in abrupt, sharply-defined limits on the lower side, on soft acclivities, whose

* From the Botanische Zeitung, Sept. 19th, 1845.

grassy surface still remains entirely the same, and this even in districts at present uninhabited by man. How can this be explained except by the operation of earlier cultivation, which in a short time destroys with fire and axe what nature can only create anew in centuries? It appears however that there is no cause for apprehending that the sanctuary of the higher forest tracts, lying at above 5000 feet, will ever be destroyed; partly because the want of water renders it difficult to dwell there, as the springs in most of the Japanese mountains rise below this region, generally at a height of 3000 feet, and often much lower; partly also because the Japanese, who love warmth, would be deterred by the great damp and coldness of those tracts, where for the greater part of the year the heights are enveloped in clouds, and where neither rice nor cocoa palms (their chief source of food) thrive; not to mention the steepness of the acclivities.

“We soon reached the highest limits of the young coffee-plantations, which are here laid out among the forest-trees, and we now entered the moist shady cover of the primitive forests, which clothe the increasingly steeper acclivities. Oaks (*Quercus pruinosa* and *depressa*, Bl.) and arborescent *Melastomæ* prevail in company with a species of fir (*Podocarpus amara*, Bl.), which became more and more plentiful as we ascended. Our way led us over a narrow steep ridge, which in some parts was scarcely a foot wide, and descended abruptly on both sides into deep rocky clefts; it would perhaps be impossible to climb over it, were it not, like everything here, overgrown with the most luxuriant forest-trees. Above this dangerous pass, the *Podocarpus amara* occurs more plentifully than in other districts, and gives to the woods a peculiar appearance; their trunks, which at the base are frequently more than six feet in diameter, rise perpendicularly from fifty to seventy feet, and separate high up into the round branched and leafy crowns: when the wind sighs through their needle-shaped foliage, and moves the whitish lichens which hang down yards long from all their branches, one might fancy he saw presented to him a northern winter-scene. Continually mists drift past, in which the thermometer falls from three to five degrees.

“In this region, at about the height of 6000 feet, where the gigantic firs gradually become less frequent, we begin to meet with a small tree (*Hedera divaricata*, Jungh.) which gives to the forests a peculiar character, and whose habit involuntarily recalls to mind that of *Dracana*. From a short, knotty stem, often scarcely two to three feet high, spring many simple, undivided boughs, which attain a length of from twenty to thirty feet, and diverge on all sides in a straight or slightly curved direction, so that the outermost nearly attain a horizontal position. They are almost everywhere of the same thickness, naked, and only covered at their ends with blossoms and buds and with large petiolated leaves.

“The higher we ascend the smaller do the trees become, and we meet with *Podocarpus imbricata*, Bl., a species of fir, which covers many of the steepest acclivities, and whose young juniper-like (almost pyramidal) trees present to us here, nearly under

the equator, the true picture of a northern fir-wood. Soon however, as the tortuous rhinoceros-path greatly assists the ascent, these firs also leave us, and all the larger forest-trees disappear at about a height of 7000 feet. But now begins a variegated mixture of the most manifold and magnificent shrubs covering the acclivities, and the eye rests with rapture on the lovely blossom-covered bushes of *Gnaphalium javanicum* and *Hypericum javanicum*, Bl., of *Lonicera flavescens*, *Gaultheria punctata*, and others, under the shade of which the forms of northern plants, as *Valeriana*, *Ranunculus*, *Thalictrum*, *Swertia*, *Viola*, and *Plantago*, appear as old acquaintances. We now took our way through these bushes, and came, at near ten o'clock, to a small headland, from whence we looked down upon the clouds far below, appearing like a white moving sea: this headland resembles a plateau, which interrupts the continuous and steep side of the mountain; on the north-east it is bounded by a deep cleft, is moreover of only small extent, and soon rises again to the mountain-top, which is about 1000 feet higher. Beside small shrubs, it is especially overgrown with tall species of grass, amongst which several low-trodden rhinoceros-paths wind their course. But the acclivity of the mountain itself is clothed with small woods of a peculiar appearance, which ascend up nearly to the edge of the crater; in some tracts it is *Acacia montana* (Kamalandingang), whose slender stalks are pressed together; in others *Thibaudia varingiaefolia*, which we never saw so luxuriant and strong as here; it forms a shady wood, through which we made our way along a rhinoceros-path; its stems attain the thickness of a man's thigh up to that of a man's body, and rise in a sinuous, generally oblique direction, twenty to thirty feet high, before they branch out into the leafy crowns. The long *Usneæ*, which hang down from the branches—the thick layers of numerous mosses and lichens, which together fructifying in the most luxuriant manner, clothe the knotted sinuous stems—further, the enormous circumference of a species of plant which we are quite unused to meet with so large,—give to this forest an extraordinary, primæval, and as it were a solemn appearance. The ground in the wood is covered with grasses, among which here and there occurs a *Balanophora elongata*, Bl., which we found at such heights, parasitical on roots of *Thibaudia*."

[To be continued.]

BIBLIOGRAPHICAL NOTICES.

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It will not be requisite that we should say anything more concerning this publication, since the papers contained in it are already known to our readers, they having appeared in vols. xi. to xvi. of these 'Annals.'

They are now resissued in the present form for the convenience of the Members of the Society, and in conformity with a resolution